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Eik Bezzel

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EXAMINER

TUMMINELLI, ALEXANDER S

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,424	Applicant(s) BEZZEL ET AL.	
	Examiner ALEXANDER S. TUMMINELLI	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

1. The Amendment filed 18 June 2008 has been entered. Claims 1-18 remain pending in the application. The rejections under U.S.C. 112 second paragraph of claim 1 for the use of "sufficiently" and the use of the broad term "a given distance," which was subsequently limited by the narrower term "at most to distances within an indoor facility" are withdrawn due to amendment. The rejection under U.S.C. 112 second paragraph of claim 11 for the use of "partially" is withdrawn due to amendment.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7, 9-11, 13, and 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "sufficiently" in claim 1 is a relative term which renders the claim indefinite. The term "sufficiently" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "essentially" in claims 1-2, 4-7, 9-10, 13, and 15-17 is a relative term which renders the claim indefinite. The term "essentially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and

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one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "considerably" in claim 3 is a relative term which renders the claim indefinite. The term "considerably" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "low reflectivity" in claim 10 is a relative term which renders the claim indefinite. The term "low reflectivity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "partially" in claim 11 is a relative term which renders the claim indefinite. The term "partially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 1, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a)

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merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation “a given distance”, and the claim also recites “at most to distances within an indoor-facility” which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-13 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindmayer (US 3811954).

In regard to the limitations as stated in claim 1, Lindmayer teaches an optical element in the form of an at least partially transparent face that comprises both transparent areas and essentially non-transparent areas, characterized in that the optical element comprises a structure that constitutes at least a part of a solar cell (Fig. 3, col. 3/lines 49-56)

In regard to the limitations of the transparent areas are arranged sufficiently close to each other for the individual, intermediate, essentially non-transparent areas to be essentially invisible to the naked eye, at least when the element is viewed from a given distance that corresponds, however, at most to distances within an indoor-facility and the essentially non-transparent areas are arranged sufficiently close to each other and have a sufficient extent at right angles to the face for the intermediate, transparent areas to have a depth/width ratio that causes the optical element to allow, at a given point on the face, passage of light with given angles of incidence, while light having other angles of incidence are unable to pass through the optical element at the point in question, change in size and shape is not patently distinct over the prior art absent persuasive evidence that the particular configuration of the claimed invention is

significant. See *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). MPEP 2144.04[R-1].

In regard to the limitations as stated in claim 2, Lindmayer teaches all the limitations as stated above. Lindmayer also teaches an optical element, characterised in that said essentially, non-transparent areas constitute a continuous face, such that the transparent areas appear as openings in this face (Fig. 3, col. 3/lines 49-56).

In regard to the limitations as stated in claim 3, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that said openings are elongate, whereby they have, in a given direction in the plane of the face, an extent that considerably exceeds the extent in a direction at right angles thereto in the plane of the face (Fig. 3, col. 3/lines 49-56).

In regard to the limitation of said openings are elongate, whereby they have, in a given direction in the plane of the face, an extent that considerably exceeds the extent in a direction at right angles thereto in the plane of the face, change in size and shape is not patently distinct over the prior art absent persuasive evidence that the particular configuration of the claimed invention is significant. See *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). MPEP 2144.04[R-1].

In regard to the limitations as stated in claim 4, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised

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in that said transparent areas constitute a continuous face, such that the essentially non-transparent areas appear as islands in this face (Fig. 11).

In regard to the limitations as stated in claim 5, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that the transparent areas and the essentially non-transparent areas are arranged in a mutually regular pattern (Fig. 3).

In regard to the limitations as stated in claim 6, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that the individual transparent areas have, at least in one direction in the plane of the face, an extent that is as a maximum ten times the extent of the essentially non-transparent areas at right angles to the face (col. 3/lines 49-56, col. 5/lines 9-23).

In regard to the limitations as stated in claims 7-9, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that:

- the transparent areas are arranged such that the individual, intermediate, essentially non-transparent areas have an extent that is, at least in one direction in the plane of the face, less than 10 mm (Fig. 3, col. 3/lines 49-56).
- the transparent areas are arranged such that the individual, intermediate, non-transparent areas have an extent that is, at least in one direction in the plane of the face, smaller than 1 mm (Fig. 3, col. 3/lines 49-56).
- the transparent areas are arranged such that the individual, intermediate, essentially non-transparent areas have an extent that, at least in one

direction in the plane of the face, is less than 100 μm (Fig. 3, col. 3/lines 49-56).

In regard to the limitations as stated in claim 10, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that the essentially non-transparent areas consist of a material with a low reflectivity, such that light is only to a limited extent reflected from the surfaces of the essentially, non-transparent areas (col. 5/lines 9-23).

In regard to the limitations as stated in claim 11, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element characterised in that that it is configured as a film that can be attached to a surface on another, at least partially transparent optical element (Fig. 1).

In regard to the limitations as stated in claim 12, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that it is configured as an integral part of a window pane (Fig. 1).

In regard to the limitations as stated in claim 13, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that at least a part of the essentially non-transparent areas are configured for functioning as electrode in a solar cell (col. 3/lines 40-45).

In regard to the limitations as stated in claims 17 and 18, Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that the essentially, non-transparent areas comprise surfaces that are configured as solar cells (Fig. 1).

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8. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindmayer (US 3811954) as applied to claims 1-13 and 17-18 above, in view of Gratzel et al (US 4927721).

In regard to the limitations as stated in claims 14 and 15, Lindmayer teaches all of the limitations as stated above. However, Lindmayer does not explicitly teach that the solar cell is a photo-electro-chemical cell and that the non-transparent areas comprise a semi-conductor, on which a suitable dye is adsorbed, and are configured for functioning as a photo-electrode.

Gratzel et al teaches a photo-electro-chemical solar cell, comprising a semi-conductor, on which a suitable dye is adsorbed, which is configured for functioning as photo-electrode (col. 1/lines 5-35).

Lindmayer and Gratzel et al are of analogous art because they both pertain to solar cells. It would be obvious to one of ordinary skill in the pertinent art at the time of the invention to combine the structure of Lindmayer with the semi-conductor on which a dye is adsorbed of Gratzel et al for the purpose of providing a durable regenerative photo-electrochemical cell whose polycrystalline metal oxide semiconductor does not corrode and which has an improved electrical energy yield in the light spectrum range, more particularly the sunlight spectrum (Gratzel et al, col. 1/lines 46-53).

In regard to the limitations as stated in claim 16, modified Lindmayer teaches all of the limitations as stated above. Lindmayer also teaches an optical element, characterised in that the essentially non-transparent areas comprise electrically conductive particulate

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material and are configured for functioning as a counter electrode (Fig. 1, Fig. 3, col. 3/lines 40-65).

Response to Arguments

9. Applicant's arguments filed June 18, 2008 have been fully considered but they are not persuasive. With regard to the argument that page 16, lines 1-25 enables one of ordinary skill in the art to understand the meaning of essentially, the examiner respectfully disagrees. The examiner understands that this section of the specification does indeed describe the absorption of light as light passes through material, however, it still remains unclear as to what the applicant means by "essentially" non-transparent. With regard to the argument that page 25, lines 5-13 enables one of ordinary skill in the art to understand the meaning of considerably, the examiner respectfully disagrees. The examiner understands that this section of the specification does indeed describe an example of how much would be considered "considerable," however, no bounds are made as to how much an inconsiderable amount would be. With regard to the argument that "low reflectivity" is a known term in the art, the examiner respectfully disagrees. Even within the art, the term "low reflectivity" is a relative term and no further bounds are made within the applicant's specification that further defines this term. With regard to the applicant's argument that Lindmayer does not teach an optical element with transparent areas, the examiner respectfully disagrees. The examiner points to Figure 3 and column 3, lines 49-56 which describes a fine metallic grid with openings which can be interpreted as the applicant's optical element with transparent and essentially non-transparent openings. With regard to the applicant's argument that the

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examiner's argument of change in size and shape is not patentably distinct over the prior art absent persuasive evidence that the particular configuration of the claimed invention is significant does not apply to the claims, the examiner is of the understanding that the limitations in claim 1 of the transparent areas are arranged such that individual, intermediate, essentially non-transparent areas are essentially invisible to the naked eye, at least when the optical element is viewed in a predetermined range, the essentially non-transparent areas are arranged close to each other and extend at right angles to a transparent face such that the transparent areas have a depth/width ratio that causes the optical element to allow, at a given point on the transparent face, passage of light with given angles of incidence, while light having other angles of incidence are unable to pass through the optical element at the given point, and the optical element comprises a structure that forms at least a part of a solar cell would only require a change in size and shape of the metallic grid of Lindmayer and would not be considered patentable over the applied art.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER S. TUMMINELLI whose telephone number is (571)270-3878. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm EST, Alt. Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571)272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AST

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795